

OCT 06 2003



CTGTCACGCCGGGCTTACGTCCCAGGGAGGGAGGGCGGCCACACCCAGGCCGACCGCTGGAGTCTGAGGCTGAGTGAGTTGGCCGAGGCCTGCATGTCGGCTGAAGGCT
GAGTGTCCGGCTGAGGCCAGGCCAAGGGCTGAGTGTCAGCACACCTGCCGCTTCACCTCCCCACAGGCTGGCGCTGGCTCACCCAGGGCAGCTTTCTCAC
CAGGAGCCCGGCTTCCACTCCCCACATAGGAATAGTCATCCCCAGATTGCCATTGTTACCCCTGCCCTGCCCTCCCTTGCCCTTCCACCCACCATCCAGGTGGAGACCCCTGAGAA
GGACCCCTGGAGCTCTGGGAATTGGAGTGACCAAAGGTGTGCCCTGTACACAGGCAGGGACCCCTGCACCTGGATGGGGTCCCTGTGGTCAAATTGGGGGAGGTGTGGAGTAA
AATACTGAATATATGAGTTTCAGTTTGA

FIG. 11U



N-terminal domain truncated telomerase

ATGCCGCGCGCTCCCCCTGCCGAGCGCGCTCCCTGCGCAGCCACTACCGCGAGGTGCTGCCGTGCCACGTTGTC
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
CCCCCTCCCTCCGCCAGGTGCTGCCGTGAAAGGAGCTGGCTGCCGAGTGTGCCAGAGGCTGTGCCAGGGCGGCCAGAAGA
C G F A L L D G A R
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
GGGGGGCCCCCGAGGCCCTCACCAACCGCGCCAGCTACCTGCCAACACCGTGAACCGACGCAGCTGCCGGGAGCGGGGCT
G G P P E A F T T S V R S Y L P N T V T D A L R G S A W G L L L R R V G D D V
GCTGGTTCACTGCTGCCACCGCTGCCGCTCTTGTGCTGCTGCCAGCTGGCTGCCAGCTGCCAGCTGCCAGCTGCCACT
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGGACCCGAAGGCCAGGTGCGAAGCCCTGGAAACCCATAGCGTCAAGGGAGCCGGCTCCCTGGCTGCCAG
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGCTGCCAGGCCAGGTGCGCTGCCCTGAGCCGGAGGGAGCCGGCTGGCGAGGGGGCTGGCCACCG
S R S L P L P K R P R R G A A P E P E R T P V P G Q G S W A H P G R T R G P S D R
G F C V V S P A R P A E E A T S L E G A L S G T R H S P S V G R Q H A G P P
TGGTTCTGCTGGGTGCTACCTGCCAGGCCGAAGAAGCCACCTCTTGGAGGGTGGCTCTGCCAGCCACTCCACCCATCGT
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
CTCTCTGAGGCCAGGCCACTGGCTCGAGGCCCTGGAGACCCATCTTCTGGGTTCCAGGCCCTGGATGCCAGGACT
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
AATGCCGGCCCTGTTCTGGAGCTGCTGGAAACACGCCAGTGCCCTACGGGGTGCCTCAAGACGCACTGCCGCTGCCAG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CTCTGCCGCTGGTCCCCCAGGCCCTGGGCTCCAGGCCACACGCCAGGCCCTGGAGACCCAGGCCCTGCCAG
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTACGTCGCTGAGCTGCTCAGGTCTTCTTATGTCAGGGAGACCCAGTTCAAGAAGACAGGCTCTTCTAC
M S V Y V V E L L R S F F T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AAT - NNN - GACAGTCACCAGGGGGTTGACGCCGGACTGGCGTCCCAGGGTTGACTATAGGACCAAGGTGCTGCCAG
CATGGGTGGACGTGGCCCGGGCATGGCTCTGCGTGTGGCTGCCCTGAGCCCTCACTGACTCGTGGCTCCCGTGA
GCTGAGCAAGCCTCTGAGGGCTCTATTG -

FIG. 11A

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PATENT & TRADEMARK OFFICE

Truncated protein 1

ATGCCGCGCGCTCCCCCTGCCGAGCGCTGCCACTCGCAGGTCGCCACTACCGCAGGTGCTGCCCTGCCACGGTCTGGCACGGCCCGCCCCGGCG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
R R L G P Q G W R L V Q R G D P A F R A L V A Q C L V C V P W D A R P P P A A
P S F R Q V S C L K E L V A R V L Q L C E R G A K N V L A F G F A L L D G A R
G G G G C C C C C C G A G G C C T C A C C A C C A G C G C A G C T A C C T G C C A A C A C G G T G A C C G A C G C A C T C G C G G G A G C G G G G C G T G C G C T G C G C G C G A C G C T
G C T G G T C A C C T G C T G C A C G C T G C G C G C T C T T G C T G G T G G C T C C A G C T G C G C C T A C C A G G T G C G G G C C C G C T G C T A C C A G C T G C G C G C T G C C A C T C A G G C C G C C C C C G C
L V H L L A R C A L F V L V A P S C A Y Q V C G P L Y Q L G A A T Q A R P P P
A C A C G C T A G T G G A C C C G A A G G C G T C T G G A T G C G A A C G G C T G G A A C C A T A C G C G T C A G G G A G G C C G G G T C C C C T G C C A G C C C C G G G T G C G A G G A G G C G C G G G G G C A G T G C
C A G C C G A A G T C T G C C G T T G C C A A G G C C C A G G C G T G C C G C T G C C C C T G A G C C G G A C C G G A C C C C G T T G C C G A G G G G T C T G G G C C A C C C G G G A C G G A C C G G A C G A C G C G G C C C C C
S R S L P L P K R P R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
T G G T T C T G T G G T G T C A C C T G C C C A G A C C C C C G A A G A G C C A C C T C T T G G A G G G T G C G C T C T G G C A C G C G C C A C T C C C C A C C C A T C G T G G G C C C G C A C C A C G C G G C C C C C
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H A G G P
A T C C A C A T C G C G C C A C C A C G T C C C T G G A C A C G C T T G T C C C C C G G T A C G C C G A G C A A G C C A C T T C C T C A T C C C T C A G G C G A C A A G G A G C A G C T G C G C C C C T C C T C C T A C T C A G
S T S R P P R P W D T P C P P V Y A E T K F L L S G T D K E Q L R P S F L L S
C T C T C T G A G G C C C A G C C T G A C T T G G C G C T C G G A G G C C A C T T T C T G G G T T C C A G G C C T G G A T G C C A G G A C T C C C C C A G G T T G C C C C C C T G C C C C A G G C C T A C T G G C A
S L R P S L T G A R R L V E T I F L G S R P M P G T P R R L P R L P Q R Y W Q
A A T G C G G C C C C T G T T C T G G A G C T G C T T G G A A C C A C G C G A C T G G C C C T A C G G G G T G C T C T C A A G A C G C A C T G C C C G C T G C G A G G C T G C G G G T A C C C C A G C A G C G G G T G C T G C C C
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
G G A G A G C C C C A G G G C T C T G G G G C C C C G A G G A G G A G A C A G A C C C C G T C G C T G G T C A G G C A C A G C A G C C C C T G G C A G G T G A C C G C T T C G G C A G G A C T C T G C G A G G A C T
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
C C T G C G C C G G T G G T G C G G C C C C A G G C C T C T G G G C T C C A G G C A C A A C G A C G C G C T C C A G G C A A G C A G C T C T C C C T G G G A G C A T G C C A A G C T C T C G C T G C A G G A G C T
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
G A C G T G G A A G T G A G C C T G C G G G A C T G C C G T T G G C T G C G C A G G A G G C C A G G G T G C T G C G C A G G A G A T C T G G C C A G G A G A T C T G G C C A G G A G A T C T G G C C A G G A G A T C T G G C C A G G A G A T
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
G A T G A G T G T G A C G T C G C G A G C T G C G C T C A G G T C T T T T A T G T C A C G G A G A C C A G C T T C A A A A A C A G G C T C T T T T C A C C G G A A G A G T G T C T G G A G C A A G T G C A A G C A T T G G
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
A A T C A G A C A G C C A C T T G A A G A G G G T G C A G C T G C G G G A G C T C G G A A G C A G A G G T C A G G C A G C A T C G G A A G C A G G C C A G G C C C C T G C T G A C G T C C A G A C T C C G C T T C A T C C C A A G C C T G A
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
G T G G C T G T G C T T G G T T A A C T C C T T T T A A C C G A A
V V A V L W F T F L F N Q K
C G G G C T G C G C C C G A T T G T G A A C A T G G A C T A C G T G T G G G A G C C A G A C G T T C C G C A G A G A A A A G A G G G C C G A G C C T C A C C T C G A G G G T G A A G G C A C T G T C A G C G T G C T C A C T A C G A
G L R P I V N M D Y V V G A R T F R R E K R P S V S F R G *

FIG. 11B

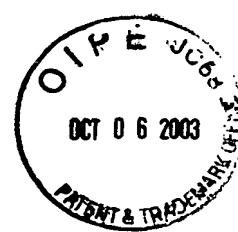


Truncated protein

GTCTACGTCCAGTG
V L R P V

CCAGGGATCCCGCAGGGCTCCATCCTCTCCACCGCTGCTCGAGGGCATGGACAAAGCTGGTTCGGGGATTCGGCGGAGGGCTCTCTGGTTGGTGGAA
P G D P A G L H P L H A A L Q P V L R R H G E Q A V C G D S A G R A A P A F G G
TGATTTCTTGTGGTGACACCTCACCTCACCCACCGGAAACCTTCTCAGGACCCCTGGTCGAGGTGTCCTGAGTATGGCTCGCTGGTGAACCTGGCGAAGACAGTGGTGAACCTTCCC

FIG. 11C



Truncated protein 3

ATGCCGCGCCTCCCGCTGGCGAGCCGCTGCCGCTCCCTGCCGAGCCACTACCGCAGGTGCTGCCGCTGGCACGCCGCCCCCCCCCGC
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGCGCCCTGGGCCCCAGGGCTGGCGCTGGTGCGAGCGGGGACCCGGCGCTTCCCGCGCTGGTGGCCAGTGCTGCCGCTGGCGCTGGCACGCCGCCCCCCCCCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C P W D A R P P P A
CCCCCTTCCGCCAGGTGCTCTGCTGAAGGAGCTGGTGGCCGAGTGCTGCCAGAGCTGTGGAGGCCGGCGAGAACGAGCTGCTGCCCTTCCGCCGCTGGCACGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R A G K A N V L A F G F A L L D G A R
CGGGGGCCCCCGAGGCCCTCACCCACCGCTGCCAGCTACCTGCCAACACCGTGAACGCCACTGGGGGGAGCGGGCGTGGGCCCTGCTGCTGCCGCTGGCGACCG
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGTTCACCTGCTGGCACGGTGCCTCTTGTCTGGCTCCAGCTGCCCTACCCAGGTGCTGGGCCCTGTAACCGCTGCCGCTGCCACTCAGGCCGGCCCCCG
L V H L L A R C A L F V L V A P S C A Y Q V C G G P P L Y Q L G A A T Q A R P P P
ACACGGCTAGTGACCCGAAGGGCTGGGATGCCAACGGGCCCTGGAAACCATAGCTCAGGGAGGCCGGTCCCCCTGCCAGGCCGGTGGAGGCCGGGGGGACTG
H A S G P R R R L G C E R A N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGTGCCCAGAGGCCACGGCGTGGCGTGGCCCTGAGCGGGAGGCCGTTGGCGAGGGTCTGGCCACCCGGGAGGAGGCCGGTGGAGCT
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTCTGTGGTGTGTCACCTGCCAACCCGCCAGAACGCCACCTCTTGGAGGGTGGCTCTGCCACGCCACTCCACCCATCGTGGGCCAGCACACGCCGGCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
ATTCACATGCCGGCACACGCCCTGGACACGGCTGTACCCGGAGACCAAGCACTCTCTACTCTCAGGCCACAAGGAGCACCGCTGCCGCTCTCTACTCG
S T S R P P R P W D T P C P P V Y A E T K H F L L T S S G D K E Q P F S P L L S
CTCTCTGAGGCCAGGCCACTGCGCTCGAGGACCATCTTCTGGGCTCAGGCCCTGGATGCCAGGGACTCCCGAGGTGCCCCCTGCCAGGCCACTGGC
S L R P S L T G A R R L V E T I F L G S R P R W M P G T P R R L P R L P Q R Y H Q
AATGCGGCCCTGTTCTGGAGCTGCTGGGAACACGCCAGCGCAGTGGCCCTACGGGGTGTCTCTCAAGAGCCACTGCCCTGGAGCTGCCAGGCCAGGCCGGCT
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAAGGCCAGGGCTCTGGCGGCCAGGGAGGAGGACACAGACCCCGCTGGCTGGAGCTGCTCCGCCAGCACAGCAGGCCCTGGCAGGGTGTACGGCTCTGCCAGGCC
E K P Q G S V A A P E E E D T D P R K R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCGCCGGCTGGTGGCCAGGCCCTGGGGCTCCAGGCCACACGCCAGGCCCTCTCAGGAACACCAAGAATCTCTCCCTGGGAAGCATGCCAGCTCTGCCAGGCC
L R R L V P P G L W G S R H N E R F F L R N T K K F C I S L G K H A K L S L Q E L
GACGTGGAAAGATGAGCTGCCGGACTTGCGCTGGCTCGAGGAGGCCAGGGTGTGGCTCTGGAGGCCAGGCCAGGGTGTGGCTCTGGCCAGACTCCGCAAGTCTCTGCACTGGC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGACCTGCTGCTGAGCTCTTCTCTTATGTCAGGGAGACCACTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTGAGGGGTGCACTGCCGGAGCTGCGGAGCTGGAGACAGGTCTGGAGGCCAGGCCAGGGTGTGGCTCTGGCTCTGGCTCTGGCTCTGGC
P I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L T S L R F I P K P D
CGGGCTGCCGGGATCTGAGACATGGACTACGGCTGGAGGCCAGACGGCTCCCGAGAGAAAAGAGGGCGAGGCCCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GGGGCGCCGGCCGGCCCTCTGGCGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
R A R R P G L L G A S V L G L D D I H R A W T F V L R V R A Q D P P P E L Y F
TGTCAAGGTGAGTGTGACGGGGCTGACACCATCCCCAGGACAGGGCTACGGAGCATCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
V K V D V T G A Y D T I P Q D R L T E V I A S I K P Q N T Y C V R R Y A V V
GAAGGGCGCCATGGAGCTGCCAGGCCCTCAAGAGGCCAGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGGCGTCGTCATCGAGAGCTCCCTGAATGAGGCCAGCAGTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGGATCCCGCAGGGCTCCATCTCCACCGCTGCCAGCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G D G L L L R L V D
TGATTTCTGTGGTGAACCTCACCCACCGAAACCTCTCTCAGGACGGCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGAGAAGACGAGGCCCTGGGGCACGGCTTGTGAGATGCCGGCCACGGCTTATCCCTGGCTCTGGCTCTGGCTCTGGCTCTGGCTCTGGC
V E D E A L G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R
GTGAGCGCACCTGGCGGAAGTGGAGCCGTGCCCCGGCTGGGAGGTGCTGCTGAGGGCGTTGCGTCCACCTCTGCTTCCGTGCTGGGAGGGACTGCCA
*
TGCCACAGGGTGGCCCTCGTCCTCATGGGCTGAGCACAAATGCACTTCTGTTGAGGGTGGCTCACACGGAGCAGTTCTGTCTATTTGGTAA

FIG. 11G



Altered C-terminus protein

ATGCCGCGCGTCCCCCTGCCGAGCGCTGCCACTACCGCGAGGTGCTGCCCTGGCACGCTGCGCTGGCACGCCACGGCGCTGGCACGCTGCGCTGGCACGCCACGGCGCCCCCGCCG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGGCCTGGGCCCCAGGGCTGGCGCTGGCGAGCGCGGGACCGGGCTTCCGGCGCTGGTGCGCCAGTGCCTGGTGTGCCCTGGGACGCCACGGCGCCCCCGCCG
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C P W D A R P P P A A
 CCCCTCCCTCCGCCAGGTGCTGGCTGAGGAGCTGGTGGCCAGTGCGAGAGGCTGCGAGGCCGCGAAGAACGCTGGCTGGGCCCTCGGCTCGGCTGCTGGACGGGGCCG
 P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
 C G G G G C C C C C C G A G G G C T T C A C C A C A G G C T G C G C G A C T C A C C G G T G A C C G A C G C A C T C A C G G G G G A G G G G C T G C T G C T G C G C C G T G C G C A C G A C G T
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
 GCTGGTCACTGCTGGCACGCTGCCGCTCTITGCTGGCTCCAGCTGCCAACAGGTGACCGACGCCACTCGGGGGAGGGGGCTGCTGCTGCCCGCTGGGGCAGCAGCT
 L V H L L A R C A L F V L V A P S C A Y Q V C G P Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCCGAAGGGCTGGCATGGAAACCCCTGGGCTGGAACCTAGCGTCAGGGAGGCCGCTGGCCACTCAGGCCGGGGCTGGAGGGCAGTGC
 H A S G P R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
 CAGCCGAAGTCTGCCCTGCCAACAGGCCAGGGCTGCCGTGCCCTGAGCCGAGCGAGGCCCTGGGAGGGGCTGCCAGGCCAGGGGGCTGGAGGGCAGCAGCTGGACCC
 S R S L P L P K R P R R G A A P E F E R T P V G Q G S W A H P G R T R G P S D R
 TGGTTCTGTGGTCACTGCCAACCCGCCAGAACGCCACCTCTTGAGGGTGGCTCTGGCACGCCACTCCACCCATCGTGGCCAGGCCAGCACCACGCCGGCCCC
 G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H A G G P
 ATCCACATCGGCCAACAGCTGCCCTGGACACGCCCTTCTGGGCTGGGAGACCAAGCAGCTCTCTACTCCCTCAGGCCACAAGGAGCAGCTGCCCTCCACTGG
 S T S R P P R P W D T P C P V P Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CTCTCTGAGGCCAGGCCACTGGCTCGGAGGCTGGTGGAGACCATCTTCTGGGCTCCAGGCCAGGCCACTCCCTCAGGCCACAAGGAGCAGCTGCCCTCCACTGG
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
 AATGCCGCCCTGTTCTGGAGCTGCTGGGAAACACGCCAGTGGCCCTACGGGGTCTCTCAAGACGACTGCCGCTGCCAGGGCTGCCAGGCCAGTGTGGCC
 M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAAGGCCAGGCCCTGAGGCCCTGGGGCTGGGGCCAGGAGGAGGACACAGACCCCCGCTGGGAGGCTGGCAGGACACAGACCCCCCTGGGAGGCTGG
 E K P Q G S V A A P E E D T D P R V R L Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCCGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGGGCCCTGG
 L R R L V P P G W S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
 GACCTGGAAGATGAGCTGGGGACTCGCCTGGCTGCCAGGAGGCCAGGGGGTGGCTGTTCCGGCCAGAGCACCGTCTGCCAGGAGATCTGCCAGTCTGCC
 T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
 GATGAAGTGTACGTCGAGCTGCTGGCTGGCTGCCAGGAGGCCAGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 M S V Y V V E L L R S F F Y V T E T T F Q K N R L F Y R K S V W S K L Q S I G
 AATCAGACAGCACTTGAGAGGGGTGAGCTGCCAGGAGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 I R O H L K R V Q L R E L S E A V R Q H R E A R P A L L T S R L R F I P K P D
 CGGGCTGGCCGATTTGAACTGGACTACGCTGGGGAGCCAGTCCGGCAGAGAAAAGAGGGCCGAGCTCTACCTCGAGGGTAAGGCACTGTCAGCGTGTCAACTACGA
 G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
 GCGGGCGGGCGCCCCCGCTCTGGGCCCTCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 F R A R R P G L L G A S V L G D I H R A W R T F L R V R A Q D P P P E L Y R
 TGTCAGGTGGATGTGAGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
 GAAGGCCGCCATGGGACGCTGCCAGGGCTTCAAGAGGCCAGCTCTACCTTGACAGACCTCCAGGCTACATGCCACGCTGGCTGGCTACCTGCCAGGAGACGCC
 K A A H G H R V K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
 TGCCCTGCTCATCGAGCTGCCAGGCTCCCTCCGAAATGAGGCCAGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 C A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q
 CCAGGGGATCCCGCAGGGCTCCATCTCCACCGCTGCTGCCAGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 C G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L R V
 TGATTCTCTGGTGAACACCTCACCTCACCCACGGAAAACCTTCTCACGGACCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
 TGAGAAGACGAGGCCCTGGTGGCACGGCTTTGTCAGATGCCGCCACGGCTTCCACGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 V E D E A L G G T A F V Q M P A H G L F P W C G L L D T R T L E V Q S D Y S S
 CTATGCCGCCACTCCATCACGGCTCACCTCACCCACGGAAAACCTTCTCACGGACCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D
 TTTGCAAGGTGAACACGGCTCCAGCGGTGCAACCATCTAACAGATCTCTCTGCTGCCAGGCTACAGGTTTCAAGCATGTCAGCTGGCTGGCTGG
 L Q V N S L Q T V C T N I Y K I L L Q A Y R F H A C V L Q L P F H Q O V W K N
 CCCACATTTCTCTGGCTCATCTCTGACACGCCCTCTGCTGACTCCATCTGAAAGGCAAGAAGCAGGGATGTCAGCTGGCTGGCTGGCTGGCTGG
 P T F F L R V I S D T A S L C Y S I L K A K N A E
 CCGAAGAAAACATTCTGCTGACTCTGCCGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 E E N I L V V T P A V L G S
 GGGACAGCCAGAGATGGACCCACCCGAGACCGCTGGGTGAGCTTCCGGTGTCTCTGGGAGGGAGTTGGCTGGCTGTGACTCTCTGAGCTCTGTTCCCCAG
 G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

FIG. 11H



Protein that lacks motif A

FIG. 111



Truncated protein that lacks motif A

FIG. 11J



Lacks motif A and altered C-terminus

FIG. 11K



N-terminal domain truncated telomerase (ver. 2)

ATGCCGGCGCCTCCCGCTGCCGAGCCGCTCCCTGCTGCCAGGCCACTACCCGAGGTGCTGCCCTGGCACGGCCACGGCGCCGGCG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGCCCTGGGGCCCAAGGGCTGGCGCTGGTGCAGCGGGGACCCGGCGCTTCCCGCGCTGGTGGCCAGTGGCTGGTGTGGCTGCCCTGGCACGGCCACGGCGCCGGCG
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
 G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
 A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
 P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
 CCCCTCCGCCAGGTGCTGCCCTGAAGGAGCTGGTGGCCCGAGTGCTGCAGGCTGTGCCAGGCCGGCGCGAAGAACGTGCTGCCCTTCGGCTGCCGCTGGACGGGGCG
 P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
 G G P P E A F T S V R S Y N P T V T D A L R G S G A W G L L L R R V G D D V
 GCTGGTTCACCTGCTGGCACCGCTGCCGCTTGTGCTGGTCCAGGTGCTGCCCTACCGGTGCTGCCAGGCCACTCAGGCTGCTGCCACTCAGGCCGGCG
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCCCAGGGCTCTGGATGCGAACGGCCCTGGAACCATAGCGTCAGGGAGGGGGTCCCGCTGCCAGCCGGGTGCGAGGAGGCCGGCAGTGC
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R R G G S A
 CAGCCGAAGTCTGCCGTGCCAACGGCCAGGGCTGCCCTGAGCCGGAGGCCAACGGCTGCCCTGGCCAGGGCTCTGGCCACCCGGCAGGACGGCTGGACCGAGTGC
 S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
 TGGTTTCTGTGGTGTACCTGCCAGCCCCGAAGAACGCCACCTCTTGAGGGTGGCTCTCTGCCACCCCACTCCACCCATCCGTGGCCGCCAGCACCAAGGGCC
 G F C V V S P A R E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
 ATCCACATCGGCCACCAGCTCCCTGGACACGGCTTGCCCTGAGAACAGCAACTCTCTACTCTCCAGGCACAAAGGAGCAGCTGGGCCCTCTCCACTCAG
 S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CCTCTGAGGCCAGCTGACTGGCTCGAGGCTGGAGACCATCTTGAGGGCTCCAGGCCCTGGATGCCAGGGACTCCCGCAGGTTGCCCTCCAGGCTACTGGCA
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R L P R L P Q R Y W Q
 AATGCCGGCCCTGTTCTGGAGCTTGGGAACCCACCGCAGTGCCTACGGGGTGTCTCAAGACGCACTGCCGCTGCCAGCTGCCCTGGTCAACCCAGGCCGGTGTGCG
 M R P F L E B L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAACCCCCAGGGCTCTGTGGCCGCCAGGGAGGAGAACAGACGGCCCTGCCCTGGTGCAGCTGCTGCCAGCACGAGCCCTGGCAGGGTACGGCTCTGCG
 E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCCGGCTGGTCCGCCAGGCCCTGGACACGGCAACGCCCTCCAGGAACCAAAGAAGTCTCTCCCTGGGAAGCATGCCAAGCTCGCTGCCAGGAGCT
 L R R L V P P G L W G S R H N E R R F L R N T K K P I S L G K H A K L S L Q E L
 GACGTGGAAAGATGAGCGTGGGACTGCCCTGGCTGCCAGGGAGGCCAGGGTTGGCTGTGCTGCCCTGGCAGAGCACCGTCTGCGTGGAGGAGCTGGCAAGT
 T W K M S V R D C A W L R R S P G V C V P A A E H R L R E E I L A K F L H W L
 GATGAGTGTGAGCTGCTGCCAGGTCTGCTCAAGGACACCAAGTCTTCTACGGAGACCAAGGCTCTTCTACCGGAAGAGTGTCTGGAGCAAGTTGGCT
 M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
 AAT - NNN - GACAGTCACCAAGGGGGTGTGACCGCCGACTGGCGTCCCAAGGGTTGACTATAGGACAGGTGTCAGGTGGCCCTGCAAGTAGAGGGCTCTCAGAGGCTCTGG
 CATGGGTGGACGTGGCCCGGGCATGGCTTCTGCCGTGTGCCGTGGTCCCTGAGCCCTCACTGAGTCGGTGGGGCTGTGGCTTCCCGTGAGCTCCCCCTAGTCGTTGCTG
 GCTGAGCAAGCCCTCTGAGGGGCTCTATTG...

FIG. 11L



Truncated protein 1 (ver. 2)

FIG. 11M



Truncated protein 2 (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCGCTGCCCTCCGTGCCGACGGCACTACCGCGAGGTGCTGCCCTGCCACGGCTCAGGGCCCTCCCCCGCAGGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGGCCCTGGGCCCCAGGGCTGGCGCTGGTGACGGCGGGACCCGGCGCTTCCGCGCTGGTGCCGAGCTGCCCTGGTGCCCTGGACGCAACGGCCCTCCCCCGCAGGTG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A
GGCTCCCCGGGCTCGCGCTGGGTTGAGGGCGCCGGGGGAAACAGCGACATGCCGAGAGCAGCGCAGGGACTCAGGGCTTCCCCCGCAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G F P P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
CCCTCTTCCGCCAGGTGCTCTGCCAGAGGTGCTGCCAGGGCTGCTGCCAGGGCTGCTGCCAGGGCGCCAGAACCTGCTGCCCTTCCGCCAGGGCGACGACT
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
CGGGGCCCCCGAGGCTTACACACAGCGCTGGCGACCTGCCAACACGGTGGCGACGCACTCGGGGGGAGCGGGCTGCTGCCAGGGCGACGACT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGGTCACCTGCTGGCACGGCTGGCGCTTCTTGCTGGCTCCAGGCTGCCAGGTGCGGGCCGCCGCTGTAACAGCTGCCGCTGCCACTCAGGCCGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGACCCGAAGGGCTGGGATCGCAACGGGCTGGAAACATAGCGTCAAGGGAGGCCGGTCCCGTGGCTGCCAGGCCGGTGGAGGGAGGCCGGGGAGCTGCG
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGTGCCAACAGGGCCAGGGCTGGCGCTGCCCTGAGCCGAGCCGGACGCCGTTGGCAGGGGCTCGGCCACCCGGGAGGCCGGTGGAGCTGCG
S R S L P L P K R P R R G A A P E P E R T P V Q G Q S W A H P G R T R G P S D R
TGGTTCTGTTGGTGTCACTGCCAGACCCGGAGAGCCACCTTCTGGAGGGTGCCTCTGCCAGGGCCACTCCACCCATCGTGGCCGCCAGCACCCGGGGCCCC
G F C V V S P A R P A E E A T S L E G A L S T R H S H P S V G R Q H H A G P P
ATCCACATCGGCCAACACGCTCTGGACACGGCTTGCCCCGGTACGCCAGAACAGCAACTCCCTACTCCAGGCCACAAGGAGCAGCTCCGCCCTCTCCACTCG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTCTGAGGGCCAGGCTGACTGGCCTGGAGGGCTGGAGACCATCTTCTGGGCTCCAGGCCAGGACTCCCGCAGGTTGCCCGCTGCCAGGGCTACTGGC
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
AATGCCGCCCCCTGTTCTGGAGGTGCTGGGAAACACGGCGAGCTGGCCCTACGGGGTCTCTCAAGACGCACTGCCCGCTGCCAGGCTGCCAGGGCTCTGGCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAACGGCCCAGGGCTGTGGCGCCGGAGAGGAGCACAGACCCGGCTGGCTGGCAGCTGCCAGCACAGCACGGCCCTGGAGGTGACGGCTCTGGGGCTG
E K P Q G S V A A P E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGGCGCGGCTGGTGGCCCAAGGCCCTGGGCTCCAGGCCAACGAGCGCTTCTCAGGAACACCAAGAGTTCTCCCTGGGAGCATGCCAACGGCTCTGGCAGGAGCT
L R R L V P P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
GACGTGGAAAGATGAGCTGGCGGGACTGCCCTGGCTGCCAGGAGGCCAGGGGTTGGCTGTGCTGGCCGCCAGCACGGCCCTGGCTGCCAGGAGATCTGGCAAGTCTCCCTGACTGGC
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGCTGACCTGGCGAGCTGGCGAGCTGGCTGGGAGCACAGTCAAGAACAGGCTTCTACGGAGACAGCTTCAAGAACAGGCTTCTACGGAGAGTCTGGAGCTGGCAAGTGG
M S V Y V V E L L R S F F V Y T V E T T F Q K N R L F L F Y R K S V W S K L Q S I G
AATCAGACAGCAGCTGGAGGGTGAGCTGGGGAGCTGGCAAGGAGGCCAGGGTCAAGACGAGCTGCCAGGAGCATGCCAACGGCCAGGGCCCTGCTGACGCTCAGACTCCGCTCATCCCCAACGGCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGGCGATTGTGAACTGGACTACGTCGTGGAGCCAGAACGTTCCGCAAGGAAAGAGGGCGAGCGCTCACCTCGAGGGTGAGGGACTGTTACGGTGTCAACTACCGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GGGGCGGGCGCCCGCCCTGGGCGCTCTGGCTGGGCTGGAGCATATCCACAGGGCTGGCCACCTCTGGCTGCCAGGGCCCTGCTGACGCTCAGGAGCTGGCAAGTGGCTGACTGG
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D F P P E L Y F
TGTCAAGGTGGATGTGAGGGCGCTACGACACCATCCCCAGGAGCACGGCTCACGGAGGTCTGCCAGGAGCATCATCAAACCCAGAACACGTA
V V K D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGGCCCATGGGACGTCGCCAAGGCCCTCAAGAGGCCAC
K A A H G H V R K A F K S H

GTCCTACGTCCAGTG
V L R P V

CCAGGGATCCCGCAGGGCTCCATCCTCTCCACCGCTGCTCGAGGGCTGTGACCGGACATGGAGAACAGTGTTCCGGGGATTCGGCGGAGGGCTCTCTCGGTGTTGGAG
P G D P A G L H P L H A A L Q P V L R R H G E Q A V C G D S A G R A A P A F G G
TGATTTCTTGTGGTGACACCTCACCTCACCCACCGCAGGGCTGTGAGTATGGCTCGCTGGTGAACCTGGCGGAAGACAGTGGTGAACCTTCCC

FIG. 11N



Truncated protein 3 (ver. 2)

ATGCCGCCGCTCCCGCTGCCAGCGCTGCCGCTCCCTGCTGGCAGCCACTACCGCGAGGTGCTGCCCTGGGACGCACCGCCGCCCCCGCCGCG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGGCCCTGGGCCCCAGGGCTGGCGCTGGTGCAGCGCGGGGACCCGGGGCTTCCCGCGCTGGGCCACTGCCCTGGTGTGCCCTGCCCTGGGACGCACCGCCGCCCCCGCCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
GGCTCCCGGGCTGGCGCTGGGTTGAGGGCGCCGGGGACCCAGCGACATGCCAGAGCGCAGGGACTCAGGCCCTCCCGCAGGT
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S R G R F P R R
A S P G S A S G W G * R A P G G T S D M R R A A Q A T Q G A S P A G
P P R G R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
CCCTCTCCGCCAGGTCTCTGCCCTGAAGGAGCTGGTGGCCGAGGTGCTGCCAGGGCTGTGCCAGGGCGCGAGAACAGTGTGCCCTCGCTGCCGCTGTGAGGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
GGGGGCCCCCGAGGCTTACACCAGCGCTGCCAGCTACCTGCCAACAGGTGACCGACACTGCCGGGGAGCGGGCTGGCTGTGCCGCCCCGTGGCGACAGCT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G L L R R V G D D V
GCTGGTCTACCTGCTGGCACGCTGCCCTCTGGCTGGCTCCAGCTGCCCTACCGGTGTGCCGGCCGCCGTGTACCGCTGCCGCTGCCACTCAGGCCGCCGCC
L V H L A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGACCCGAAGGGCTGGGATGCCAACGGCTGGAAACCATAGCGTCAAGGGAGGCCGGTCCCGCTGGCTGCCAGGCCGGTGGAGGGAGGGGGAGCT
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCGGAAGTCTGCCGTGCCCAAGAGGCCAGGGCTGCCCTGAGCCGAGCGGACGCCGTGGAGGGCTCTGGGCCACCCGGCAGGACGCCGTGGACCGACT
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTCTGTGTTGTCACCTGCCAGACCCGCCAGAACCTCTTGGAGGGCTGCCCTCTGGCACGCCACTCCACCCATCTGGGCCAGCACCCGGCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S P L V S G R Q H A G P P
ATACACATGCCGCCAACAGCTCCCTGGGACACGCCCTGTCCCCGGTGTACGCCAGAACAGACTTCTCTACTCTCAGGGACAAGGAGCAGTGTGCCCTCTTCTACTCG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTCTGAGGCCAGCTGACTGGCTGGAGGACCATCTTCTGGGTTCCAGGCCCTGATGCCAGGGACTCCCGCAGGTGTGCCCTGCCAGGGCTACTGGC
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
ATAGCGGCCCTGTCTGGAGGTGCTGGGAAACAGCGCAGTGCCCTACGGGTGCTCTCAAGAGCAGTGTGCCCTGCCAGGGCTACCCAGCAGGGCTGTCTGGC
M R P L F L E L L G N H A Q C P C Y G V V L L K T H C P L R A A V T P A G V C A R
GGAGAGGCCAGGGCTCTGGGGCCCGAGGGAGGACACAGACCCCGTGTGGAGGGACTGGCTGGAGGAGATCTGGCCAGTCAGGGAGTGTGCCCTGCCAGGGCT
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CTCTGGCCGGCTGGTGGCCCTAGGGCTCTGGGCTCCAGGACAACGAACGCCCTCTCAGGAACACCAAGAAGTTCATCTCTGGGAAAGCATGCCAAGCTCTGGTGGAGGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
GACGTGGAGATGAGCTGCCAGGGACTGGCTGGCTGGCAGGGAGCAGGGCTGGCTGGAGGAGATCTGGCCAGTCAGGGAGTGTCTGGCAAGTCTGGTGGAGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L K L H W L
GATGAGTGTGACCTGCTGCCAGGTCTTCTGGAGGACACAGGGCTGGCTGGAGGAGCTTCAAAGAACAGGCTTCTTCTACCGGAAGAGTGTCTGGAGCAGTGTGCAAGCTGG
M S V Y V V E L L R S F F Y V T T F F Q K N R L F F Y R K S V W S K L Q S T I G
AATCAGACAGCACTTGAAGAGGGTGAGCTGGAGGCTGGAGCTGGAGCAGAGGTCTGGAGCATCGGGAGGCCCTGTCAGCTCCAGACTCCGCTTCATCCCCAGCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCCGCCGATGTGAACATGGACTACGCTGTGGAGCCAGACGTTCCGAGAGAAAAGAGGGCGAGGCCCTGTCACCTCGAGGGTGAGGGACTGTCTGGCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GGGGCGCCGCCGCCCTCTGGGCCCTCTGTGCTGGGCTTGAGATATCCACAGGGCTGCCACCTTCTGCTGGCTGGGCCAGGCCCTGAGCTGTACT
R A R R P G L L G A S P V L G L D D I H R A W R T F F V L R V R A Q D P P P E L Y F
TGTCAAGGTGGATGTGACGGGCCGCTACGACACCATCCCCAGGACAGGGCTACGGAGGTCTGCCAGCATCTAACACCCAGAACAGTACTGGCTGGCTGGTATGCCGTGGTCCA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGCGCTGCTCATGCCAGGGCTCCCTGGCTGGGCTTGAGCTTCTGGCTGGGCTTGAGCTTCTGCTGGCTGGCTACGGGCCAGTCTACGGGCCAGTCTGGCTGG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H A V R I R G K S Y V Q
CCAGGGATCCCGCAGGGCTCATCTCTCCACGCTGGCTGCTGCCAGCTGGAGGACACAGGCTGGCTGGGCCATGCCAGGGAGTCTGGCTGGCTGG
Q G I P Q G S I L T S L L C S L C Y G D M E N K L F A G I R R D G L L L R V D
TGATTTCTGTGGTGGACACCTCACCCACCGGAAACCTCTGGCTGGAGGCTGGCTGGAGGAGCTGGCTGGCTGGAGTATGGCTGGCTGGTGAACCTGG
D F L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGAGAGACAGGCCCTGGGGCTGGAGGCCAGGGCTTGAGATGCCGGCCACGGCTTATCCCTGGCTGGCCCTGCTGCTGGATACCCGACCTGGAGGTTCCAGGGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R
GTGAGCGCACCTGGCCGGAGTGGAGCCCTGTGCCGGCTGGGAGGTGCTGCCAGGGCTTGCGCTCCACCTCTGCTCCCTGTGGGGCAGGCCACTGCCAATCCAAAGGGTCAGA
*
TGCCACAGGTGGCCCTCGTCCCATCTGGGCTGAGCACAAATGCACTTCTGTTGAGGTGAGGGCTGCCACACGGAGCAGTTCTGTGCTGGTAA



Altered C-terminus protein (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCCCTGCCGAGCCACTACCGCGAGGTGCTGCCGCTGCCACGGTGTG
 M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
 CGGGCCTGGGGCCCCAGGGCTGGCGCTGGTGCAGCGGGGGACCCGGCGCTTCCGGCGCTGGGGCCAGTGCCTGGCTGCC
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
 GGCCTCCCCGGGCTGGCGCTGGGTTGAGGG
 G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
 A S P G S A S G W G * G R P G T S D M R R A A Q A T Q G A S P A G
 P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
 CGGGGCCCCCGAGGGCTTACACCAAGCGTGCAGCTACCTGCCAACAGGTGACCGAGCGCAGCTGCCGGGGGGGGGGGGGG
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
 GCTGGTTCACCTGCTGGCAGCTGGCGCTTCTGGCTGCCAACAGGTGACCGAGCGCAGCTGCCGGGGGGGGGGGGGGGGGG
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
 ACACGCTAGTGGACCCCCAAGGGCTGGGATGCGAACGGCCCTGGAACCATAGCGTCAAGGGGGGGGGGGGGGGGGGGGGGG
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G S A
 CAGCCAAAGTCTGCCCTGCCAACAGGGCCAGGGCTGGCCCTGAGCCGGAGCCGGGGGGGGGGGGGGGGGGGGGGGGGG
 S R S L P L P K R F R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
 TGGTTCTGTTGCTGGGATGCGAACGGCCCTGGGAGGG
 G F C V V S P A R P A E E A T S L E G A L S G T R H S P S V G R Q H H A G P P
 ATCCACATCGGCCAACACGCTCTGGACAGCTGG
 S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
 CTCTCTGAGCCCCAGCTGACTGGGCTGGAGGG
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R L P R L P Q R Y W Q
 AATGCCGCCCCCTGTTCTGGAGCTGCTGGGAAACACGG
 M R P L F E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
 GGAGAACCCCCAGGGCTGTTGG
 E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
 CCTGCAGGGCTGG
 L R R L V P P G L W G S R H N E R F L R N T K K F I S L G K H A K L S L Q E L
 GACCTGGAACATGAGCGTGGGGACTCGGGCTTGCGAGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
 GATGAGTGTGACGTCAGCTGG
 M S V Y V V E L L R S P F T T E T T F Q K N R L F F Y R K S V W S K L Q S I G
 AATCAGACAGCACTGAGAGGG
 I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
 CGGCTGCGGGGATTGTGACATGGACTACGTCAGCTGG
 G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
 GGG
 R A R R P G L L G A S V L G L D I H R A W R T F V L R V R A Q D P P P E L Y F
 TGTCAAGGGGGATGTGAGGG
 V K V D V T G A Y D T I P Q D R L T E V I A S I I K F Q N T Y C V R R Y A V W Q
 GAAGGGCCCATGGGACGTCGCGAAGGGCTCAAGAGGG
 D K A A H G H V R K A F K S H V S T L T D L Q P V Y M R Q F V A H L Q E T S P L R D
 TGGCCCTGTCATCGAGACGGCTCTCCCTGAATGG
 A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
 CCAGGGGATCCCGCAGGGCTCCATCTCCACGGCTGCTGCCAGCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R V D
 TGATTTCTCTGTTGACACCTCACCTCACCCACGGAAACCTCTCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 D F L L V T P H L T H A K T F L R T L V R P V E Y G C V V N L R K T V N F P
 TGAGAGAACGGGGCTGG
 V E D E A L G G T A F V P R F H A C V L Q P F H O V W K N
 CTATGCCGACCTCCATAGGCCAGTCTCACCTCACCCACGGCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 Y A R T S I R A S L T P N R G F K A G R N M R R K L F G V L R L K C H S L F L D
 TTTGAGGTGAACAGCTCCAGACGGGTGCAACACATCTACAAGATCTCTCTGCTGCCAGGGCTACGGGTTCAG
 L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H O V W K N
 CCCACATTTCTCGCGGTCACTCTGACACGGCCCTCCCTCTGCTACTCCATCTGAAAGCCAGGGATGCGTGGGG
 P T F F L R V I S D T A S L C Y S I L K A K N A E
 CGGAGAAAACATTTCTGCTGACTCTCGCGGTGCTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG
 E E N I L V V T P A V L G S
 G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *
 GGGACAGCCAGAGATGGGGCCACCCCGAGACCGTGG
 G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L

FIG. 11S

A circular stamp with the text "OIR 1 UC63" in the center. The words "PATENT & TRADEMARK OFFICE" are curved along the bottom edge of the circle.

Protein that lacks motif A (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCAGGGCGCTGGCTGCCAGGGCGGGGGAAACCAAGGCCACTACCGCGAGGGCTGCCAGGGACTCAGGGCGCTCCCCCGCAGGGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V
CGGCCTGGGGCCAGGGCTGGCGCTGGTGACGCCGGGACCCGGCGCTTCCGCCGCGCTGGTGCCCCAGTCGCCCTGGCTGCCAGGCCACGGCCGCCCGCCCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A
GGCTCCCGGGGCTGGCGCTGGCTGGGGGGAAACCAAGGCCACTACCGCGAGGGCTGCCAGGGACTCAGGGCGCTCCCCCGCAGGGT
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G F P P R R
A S P G S A S G W G * G R P G G T Q S D M R R A A Q A T Q G A S P A G
P P R G R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V
CCCGCTTCCCGCCAGGTGCTCTGCCGAAGGAGCTGGTGCCGAGCTGGCAGAGGGCTGTGCCAGGGCGGGGGAAAGAACCTGCTGCCCTGGCCCTGGCGCTGCCAGGGCC
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A P F G A L D G A R
GGGGGCCCCCGAGGGCTTACCCACAGCGTGCCGAGCTACCGGCCAACCGTGACGCCACTCGGGGGAGGGGGCTGGCTGTGCCCTGGCCCTGGCGACGGCT
G G P P E A F T T S V R Y S L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGGTACCTGCTGGCACCGCTGGCTTGTGGCTCCAGCTGCCATACAGGTGCTGGGGCCGCCGTGCTACAGCTGCCGCTGCCACTCAGGCCGCCCGCC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACACGCTAGTGACCCGAAGGGCTGGATGCCAACGGGCTGGAACCCATACCGTCAGGGAGGCCGGTCCCCCTGGCTGCCAGCCCCGGTGCAAGGGCGGGGGCAGTC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCCGAAGTCTGCCGTTGCCCAAGGGCCAGGGCTGGCGCTGCCCTGAGCCGGAGCCGGACCTGGCAGGGTCTGGGCCACCCGGCAGGACGCCGGTGGAC
S R S L P L P K R F R R G A A P E P E R T P V G Q G S W A H P R T R G P S D R
TGGTTCTGTTGCTGACCTGCGACAGGCCAGAGAACCCACTTTGGAGGTGCCCTCTGGCACGGCCACTCCACCCATCGTGGGCCAGCACCCAGCGGGCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
ATCACACATCCGCCACAGCTGGACCGCTGGTACGCCAGAACCCAGCTTGGAGGTGCCCTCTGGCACGGCCACTCCACCCAGCGGGCTCTGGCC
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTCTGAGGCCAGGCTGACTGGCCCTGGAGGCTGGAGGACCATCTTCTGGTTCCAGGCCCTGGATGCCAGGGACTCCCGCAGGTGCCCGCT
S L R P S L T G A R C E V L C P Y G V L L K T H C P L R A A V T P A A G V C A R
AATGGCCGCCCTGGAGGCTGGGAACACGCCAGTCGGCCCTACGGGGCTCTCAAGGCCACTGCCGCTGGAGCTGGCTACCCAGCAGCGGGTGTCTGGCC
M R P L F E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAAGGCCAGGGCTGTGGCCGCCCGAGGAGGAGCACAGACCCCGTCGGCTGGAGCTGGCTCCAGGGCTCTGGAGGTGTACGGCTCTGGCC
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCCGGCTGGGCCAGGCCCTGGGCTCCAGGCACAGGCCAGTCGGCCCTACGGGGCTCTCAAGGCCACTGCCGCTGGAGCTGGCTACCCAGCAGCGGGTGTCTGGCC
L R R L V P P G L W G S R H N E R R C K F I S L G K H N Q L Q E L
GACGTGGAAGATGAGCGTGCGGACTCGCTGGCGAGGAGGCCAGGGGGCTGGCTGTGCTGGCCAGGACCCCTCTGGCTGAGGAGATCTGGCAAGTCTCTGCACTGGC
T W K M S V R D C A W L R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGAGCTCGCAGGTGCTCAGGTCTTCTTATGTCACGGAGACCACTTAAAGAACAGGCTTCTTCTACCGGAAGAGTGTCTGGAGCAAGTGTGCAAGCTTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAGGGTGCAGCTGCCAGGAGCTGGAGGACAGAGTCAGGCCAGCATCGGAAGGCCAGGCCCTGCTACGGCTCCAGACTCGCTCACTCCCAAGGCTG
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L T S R L R F I P K P D
CGGGCTGGCCGAGGCTGGAGACTGGACTACGTCGGAGGCCAGAACGGCTGGAGGCCAGAACAGGGCTCTACCTCGAGGGTGAAGGACTGTACGGCTGCACTACAGC
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GGGGCGGGGCCCGCCCTCTGGGCTCTGTGGCTGGGCTGGAGGATATCCACAGGCCCTGGCCACCTCTGTGTGGCTGGGGCCAGAACCGCCCTGGACT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAAG
V K
GACAGGCTACGGAGGTACGCCAGCATCATCAAACCCAGAACAGTACTGGCTGCTGGCTGGGGGAGAACAGCTGGCTGCTGGCTGGCTGGTATGGCC
D R L T V I A S I K I P Q N T Y C V R Y R A V V Q
GAAGGCCGCCAGGCCAGCTGGCACGCCAGCTTCAAGGCCAGCTCTACCTTGAGGACCAACCTGGCTGGAGGAGGCCAGGCCCTGGCTGGGG
K R A A H G H V R K A F K P S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGGCGCTGCTCATCGAGAGCTCTCCCTGAATGAGGCCAGCTGGCTCTCGAGCTCTCTACCTTGAGGACAGCTGGCTGGCTGGCTGGCATCAGGGCAAGTCTACGGCTCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H A V R I R G K S Y V Q C
CCAGGGATCCCGAGGGCTCCATCTCTCCACCGCTCTGAGGCCAGAACGGGAGGCCAGAACAGCTGGGGGAGGCTCTGGCTGGGGGAGGGCTCTGGCTGGGG
Q G I P Q Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L D
TGATTTCTTGTGGTGACACTCACCCTCACCCAGGGAAACCTCTCAGGACCTGGCTGGAGGAGCTGGCTGGAGTATGGCTGGCTGGTGAACCTGGCGAAGAGCAGTGG
D F T L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAGAAGACGAGGCCCTGGGGCCTGGGGCAGCTTGCTGGAGGACATGCCGAAACTCTGGCTGGGGGAGGCTCTGGCTGGGAGGCTGGAGGCCAGTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCGGACCTCCATCAGGCCAGCTCACCTCACCGGCCGCTAACGGCTGGAGGACATGCCGAAACTCTGGGGGAGGCTCTGGCTGGGAGGCTGGAGGCCAGTACTCCAG
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S F L D
TTTGAGGTGAACGCCCTGGGGCAGCTGGCTGGAGGACACCTTCAAGAGATCTGGCTGGAGGAGCTGGCTGGGGGAGGCTCTGGCTGGGAGGCTGGAGGCCAGTACTCCAG
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCACATTCTGGGGCTATCTCTGACACGCCCTCCCTCTGACTCCATCTGAGGCCAACAGGCCAGCTGGCTGGGGGAGGCTCTGGCTGGGGGAGGCTGGAGGCCAGTACTCCAG
P T F F L R V I S D T A S L C Y S I L K A K N A G M S L G A K G A A G P L P S E
GGCCGCTGGAGCTGGCTGGCCACCAAGCAGCTTCTGAGGCCAGCTGGAGGCCAGCTGGCTGGGGGAGGCTCTGGCTGGGGGAGGCTGGAGGCCAGTACTCCAG
A V Q W L C H Q A F L K L T R H R V T Y V P L L G S L R T A Q T Q L S R K L
GGGGAGCGCTGACTGCCCTGGGGAGGCCAGGCCAGCTGGCTGGGGGAGGCTGGAGGCCAGCTGGCTGGGGGAGGCTGGAGGCCAGTACTCCAG
G T T L A T E A A N P A L P S D F K T I L D

FIG. 11T

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CTGTCACGCCGGCTCTACGTCCCAGGGAGGGAGGGCGGCCACACCCAGGCCGACCGCTGGAGCTGTAGGCCTGAGTGAGTGTTGGCGAGGCCCTGCATGTCCGGCTGAAGGCTGAGTGTCGGCTGAGCGACTGTCCAGCCAAGGGCTGAGTGTCAGCACACCTGCCGCTTCACTTCCCCACAGGCTGCCCTGGCTCCACCCAGGCCAGCTTTCCTCACAGGAGCCGGCTTCACTCCCCACATAGGAATAGTCCATCCCCAGATTGCCATTGTTCACCCCTGCCCTGCCCTTGTGCCCTCCACCCCCACCATCCAGGTGGAGACCCCTGAGAA GGACCCCTGGAGCTCTGGAAATTGGAGTGACCAAAGGTGTGCCCTGTACACAGGCAGGACCCCTGCACCTGGATGGGGTCCCTGTGGTCAAATTGGGGGGAGGTGCTGTGGAGTAA AATACTGAATATATGAGTTTCAGTTTGA

FIG. 11U



Truncated protein that lacks motif A (ver. 2)

FIG. 11V



Lacks motif A and altered C-terminus (ver. 2)

FIG. 11W